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ANNCR: THE VOICE OF AMERICA PRESENTS: ...SCIENCE NOTEBOOK... A SUMMARY OF EVENTS IN SCIENCE, MEDICINE AND TECHNOLOGY. EACH WEEK AT THIS TIME, WE BRING YOU REPORTS ON DEVELOPMENTS THAT MAY AFFECT OUR DAILY LIVES. WITH THE FIRST STORY, HERE IS YOUR SCIENCE EDITOR -----.

(WORLDWIDE ENERGY CHANGES -- 3- 2683 --DOSA)

EDITOR: THE WORLDWIDE SHORTAGE OF ENERGY IS GOING TO PRODUCE SEVERE ECONOMIC DISLOCATIONS AND BRING A HALT TO THE EXPLOSIVE GROWTH THAT CIVILIZATION HAS ENJOYED FOR THE LAST HUNDRED YEARS. THAT PREDICTION COMES FROM THE PRESIDENT OF THE CARNEGIE INSTITUTION OF WASHINGTON. HERE IS ----- WITH DETAILS.

VOICE: THE PRESTIGIOUS CARNEGIE INSTITUTION IS A PRIVATE EDUCATIONAL ORGANIZATION THAT SUPPORTS RESEARCH IN THE PHYSICAL AND BIOLOGICAL SCIENCES. ITS PRESIDENT, DOCTOR PHILIP ABELSON, A PROMINENT NUCLEAR PHYSICIST, SAYS IN HIS ANNUAL REPORT THAT "MANY PEOPLE OF THE WORLD ARE BEGINNING TO LEARN THE HARD WAY WHAT A FEW OBSERVERS HAVE KNOWN FOR A LONG TIME, THAT EXPONENTIAL GROWTH OF ANY KIND CANNOT GO ON INDEFINITELY."

VOICE: DOCTOR ABELSON THEN POINTS OUT THAT FOR MORE THAN TWO  
(CONT'D) DECADES, UNTIL THE END OF 1973, THE USE OF PETROLEUM IN  
THE UNITED STATES, WESTERN EUROPE AND JAPAN INCREASED  
RAPIDLY, WITH PETROLEUM BECOMING THE PRINCIPAL SOURCE  
OF ENERGY. THE OIL EMBARGO OF 1973 AND THE SUBSEQUENT  
SHARP INCREASE IN OIL PRICES HAVE PUT A SUDDEN END TO  
THIS RAPID GROWTH AND THE WORLD IS NOW FORCED TO LOOK FOR  
ALTERNATE SOURCES OF ENERGY.

THE UNITED STATES, ACCORDING TO DOCTOR ABELSON, IS  
FORTUNATE IN THAT IT HAS MANY ALTERNATIVES, INCLUDING  
A CONSIDERABLE GEOTHERMAL ENERGY POTENTIAL, GREAT  
COMPETENCE IN NUCLEAR ENERGY, TREMENDOUS RESOURCES OF  
FORESTS AND FARMS, AND ABUNDANT USABLE SOLAR ENERGY. FOR  
MANY OTHER COUNTRIES, THE CHOICES ARE MORE LIMITED.  
FRANCE, FOR EXAMPLE, MUST EXPAND ITS NUCLEAR POWER  
PRODUCING FACILITIES IF IT WANTS TO MAINTAIN THE STANDARD  
OF LIVING ACHIEVED THROUGH DEPENDENCE ON IMPORTED OIL.

A SIMILAR SITUATION PREVAILS IN SOUTH AMERICA, WHICH HAS  
VERY LITTLE COAL. MUCH OF THAT CONTINENT, SAYS DOCTOR  
ABELSON, MIGHT USE ENERGY DERIVED FROM PLANTS AND TREES.  
BUT IN PRACTICE, SOUTH AMERICA IS LIKELY "TO FOLLOW  
THE EXAMPLE OF BRAZIL, WHICH IS GOING NUCLEAR IN A BIG  
WAY." LIKEWISE, IRAN, CURRENTLY A MAJOR EXPORTER OF OIL,  
IS PAYING MORE AND MORE ATTENTION TO THE DEVELOPMENT OF  
NUCLEAR ENERGY IN ANTICIPATION OF THE DAY WHEN ITS OIL  
WELLS WILL BE DEPLETED.

VOICE: THE PRESIDENT OF THE CARNEGIE INSTITUTION IS APPREHENSIVE  
(CONT'D) ABOUT THE GLOBAL SPREAD OF NUCLEAR POWER, UNLESS  
ADEQUATE SAFEGUARDS ARE PROVIDED TO ASSURE THE SAFETY  
OF NUCLEAR OPERATIONS, BOTH AGAINST ACCIDENTS AND THE  
THEFT OF NUCLEAR MATERIALS BY TERRORISTS. HE SUGGESTS  
INSTEAD MAKING A BETTER USE OF THE ENERGY OF THE SUN  
WHICH COULD BE HARVESTED IN A VARIETY OF WAYS, INCLUDING  
THE LARGE-SCALE GROWING OF TREES WHICH PROVIDE AN  
EXCELLENT RENEWABLE SOURCE OF ENERGY.

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OFFSHORE NUCLEAR POWER -- 3- 2683 -- PHUONG/VIET.SVC

EDITOR: OFFSHORE OIL WELLS MAY BE JOINED BY OFFSHORE NUCLEAR  
POWER PLANTS AS A SOURCE OF ENERGY. VOA'S DUC PHUONG  
HAS THIS REPORT ON THE PLANNED CONSTRUCTION OF THE  
WORLD'S FIRST FLOATING NUCLEAR POWER PLANT.

VOICE: ONE-QUARTER CENTURY FROM NOW, BY THE YEAR 2000, NUCLEAR  
ENERGY MAY SUPPLY HALF OF THE ELECTRIC POWER NEEDS OF  
THE UNITED STATES. BUT FINDING A PLACE TO BUILD  
NUCLEAR POWER PLANTS IS BECOMING INCREASINGLY DIFFICULT.  
ONE REASON IS THAT IN THE UNITED STATES, NEARLY HALF OF  
THE TOTAL ENERGY DEMAND COMES FROM AREAS WITHIN THREE-  
HUNDRED KILOMETERS OF THE ATLANTIC, GULF AND PACIFIC  
COASTS, WHERE POTENTIAL LAND SITES FOR POWER PLANTS ARE  
GETTING MORE AND MORE SCARCE.

VOICE: THE FIRST FLOATING POWER PLANT, TO BE ANCHORED OFF THE  
(CONT'D) NEW JERSEY COAST IN THE ATLANTIC OCEAN, WOULD REQUIRE  
AN AREA OF ABOUT TWO-HUNDRED HECTARES IF IT WERE BUILT  
ON LAND. PLANS CALL FOR ASSEMBLING THE PLANT IN A  
SHIPYARD AND TOWING IT TO ITS INTENDED LOCATION WHERE  
IT WOULD BE ANCHORED TO THE OCEAN FLOOR. THE OCEAN  
ITSELF WOULD FURNISH ALL THE WATER NEEDED TO COOL THE  
POWER GENERATING EQUIPMENT.

THE PROPOSED FLOATING NUCLEAR POWER PLANT WOULD HAVE TO  
MEET THE MOST STRINGENT SAFETY REQUIREMENTS. IT WOULD  
HAVE TO BE ABLE TO WITHSTAND WAVES NEARLY FIFTEEN METERS  
HIGH AND WINDS BLOWING AT A SPEED OF TWO-HUNDRED-FIFTY  
KILOMETERS AN HOUR. ALSO, THE PLANT MUST BE STURDY  
ENOUGH TO REMAIN INTACT EVEN AFTER A COLLISION WITH THE  
LARGEST SHIPS NOW AFLOAT.

THE DESIGNERS OF THE POPOSED FLOATING NUCLEAR POWER  
PLANT HOPE IT CAN BECOME OPERATIONAL BY THE MIDDLE OF  
THE NEXT DECADE SO THAT IT CAN START FURNISHING THE  
POWER NEEDS OF A CONSIDERABLE PORTION OF THE EASTERN  
UNITED STATES.

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(WOMEN LIVE LONGER -- 3- 2683 -- DOSA)

EDITOR: U.S. CENSUS BUREAU STATISTICIANS HAVE CONFIRMED WHAT MEN  
HAVE SUSPECTED ALL ALONG, NAMELY THAT WOMEN LIVE LONGER.

----- HAS THIS EXPLANATION:

VOICE: THE STATISTICS SHOW THAT WOMEN ARE CLEARLY GAINING ON MEN. AT THE TURN OF THE CENTURY, WOMEN LIVED TWO-TO-THREE YEARS LONGER THAN MEN. IN THE YEARS SINCE THEN, THE LIFE SPAN OF BOTH SEXES HAS INCREASED BUT SO HAS THE GAP BETWEEN THE LIFE EXPECTANCY OF MEN AND WOMEN. TODAY, THE AVERAGE AMERICAN WOMAN LIVES SEVENTY-FIVE YEARS AND FOUR MONTHS, WHILE THE AVERAGE MAN HAS A LIFE SPAN OF ONLY LITTLE MORE THAN SIXTY-SEVEN-AND-A-HALF YEARS.

WASHINGTON POST MEDICAL REPORTER STUART AUERBACH QUOTES SCIENTISTS WHO BELIEVE THIS INCREASING GAP IS DUE TO GENETIC CONSIDERATIONS AND NOT THE GREATER STRESSES THAT MEN MUST CONTEND WITH, AS PREVIOUSLY THOUGHT. THIS NEW BELIEF HAS BEEN BORNE OUT BY STUDIES CONDUCTED AMONG ROMAN CATHOLIC MONKS AND NUNS. EVEN THOUGH BOTH THE NUNS AND THE MONKS LIVE SHELTERED, PRESUMABLY STRESS-FREE LIVES, IT WAS FOUND THAT NUNS LIVE LONGER THAN THE MONKS.

ANOTHER FINDING HAS BEEN THAT WOMEN PAST CHILD-BEARING AGE HAVE LESS OF A BLOOD CLOTTING PROBLEM THAN MEN DO. THIS PROBABLY ACCOUNTS FOR THE FEWER HEART ATTACKS AMONG MIDDLE AGED AND OLDER WOMEN THAN MEN. SCIENTISTS THINK NATURE HAS PROVIDED YOUNG WOMEN WITH A GREATER BLOOD CLOTTING ABILITY TO KEEP THEM FROM BLEEDING TO DEATH DURING THEIR MENSTRUAL PERIODS.

ANIMAL STUDIES PERFORMED AT WASHINGTON'S GEORGETOWN UNIVERSITY CONFIRM THAT FEMALE RATS AND GUINEA PIGS

VOICE: ALSO HAVE A LOWER BLOOD CLOTTING ABILITY THAN THE MALES  
(CONT'D) OF THEIR SPECIES.

DOCTORS AND STATISTICIANS ALIKE AGREE THAT THE GAP BETWEEN THE LIFE EXPECTANCY OF MEN AND WOMEN IS NOT LIKELY TO NARROW IN THE FORESEEABLE FUTURE. ONE UNDESIRABLE FACTOR THAT MIGHT NARROW IT WOULD BE THE CURRENT INCREASE IN CIGARETTE SMOKING AMONG WOMEN. THE TAR AND NICOTINE THE WOMEN INHALE MAY WELL HELP INCREASE THEIR SHARE OF LUNG CANCER WHICH IS ALREADY ONE OF THE MAIN KILLERS OF MEN.

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(RESEARCH YACT CELEBRATED -- 3- 2683 -- DOSA)

EDITOR: MANY, MANY YEARS AGO, AN AMERICAN MILLIONAIRE HAD A BEAUTIFUL SIXTY-ONE METER YACHT BUILT IN A DANISH SHIPYARD. THE HUSSAR, AS THE LUXURIOUS YACHT WAS CALLED, WAS DRAFTED INTO MILITARY SERVICE DURING THE SECOND WORLD WAR AND EVENTUALLY BECAME A SCIENTIFIC RESEARCH VESSEL WHICH HAS JUST COMPLETED ONE-MILLION MILES (1.6 MILLION KILOMETERS) OF CARRYING SCIENTISTS ON THE WORLD'S OCEANS. HERE IS ----- WITH A LOOK AT SOME OF THE HIGHLIGHTS OF THOSE TRAVELS.

VOICE: THE HUSSAR HAS LONG AGO SHED ITS THREE MASTS AND SAILS, ALONG WITH ITS LUXURIOUS FURNISHING, EVEN ITS NAME. TODAY, THE SHIP IS CALLED VEMA, IS PROPELLED BY DIESEL ENGINES, AND ITS ONCE ELEGANT SALONS AND STATE ROOMS HAVE BEEN CONVERTED INTO LABORATORIES. VEMA WAS ACQUIRED AFTER THE SECOND WORLD WAR BY THE LATE DOCTOR MAURICE

VOICE:  
(CONT'D) EWING, DIRECTOR OF NEW YORK'S COLUMBIA UNIVERSITY'S  
LAMONT-DOHERTY GEOLOGICAL OBSERVATORY.

DOCTOR EWING AND HIS FELLOW SCIENTISTS HAVE BEEN SAILING ABOARD THE VEMA ON ALL THE WORLD'S OCEANS, TAKING MEASUREMENTS, SAMPLING SEAFLOOR SEDIMENTS, OBSERVING CHANGES IN THE OCEANS' MAGNETIC FIELDS, COLLECTING IMMENSE AMOUNTS OF DATA WHICH HAVE RESULTED IN DISCOVERIES GIVING US AN ENTIRELY NEW UNDERSTANDING OF THE STRUCTURE OF THE EARTH.

PERHAPS THE MOST IMPORTANT CONTRIBUTION OF THE VEMA HAS BEEN THE FINDING OF EVIDENCE IN SUPPORT OF THE CONTINENTAL DRIFT THEORY, REGARDED BY MANY AS ONE OF THE MAJOR SCIENTIFIC DISCOVERIES OF OUR CENTURY.

MEASUREMENTS OF CHANGES IN THE MAGNETISM ON THE FLOOR OF THE ATLANTIC OCEAN HAVE FURNISHED PROOF THAT THE OCEAN FLOOR IS SPREADING AND ITS BORDERING CONTINENTS ARE DRIFTING APART.

THE DAY OF COMPLETION OF THE FIRST MILLION MILES WAS ONE OF WORK AS USUAL FOR THE VEMA AND ITS SCIENTIFIC CREW. THE SHIP WAS SOMEWHERE SOUTH OF AUSTRALIA, STUDYING, AS USUAL, THE OCEAN FLOOR, CONTINUING WHAT HAS BEEN HAILED AS "SCIENCE'S LONGEST AND MOST PRODUCTIVE EXPLORATION OF THE OCEANS."

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ELECTRIFIED CHICKEN -- 3-2683      -- DOSA)

EDITOR: CHICKENS AND ELECTRICITY ARE SELDOM THOUGHT OF TOGETHER, UNLESS IT IS THE IDEA OF BAKING A CHICKEN IN AN ELECTRIC OVEN. BUT THERE IS ANOTHER CONNECTION, TOO, AS ----- REPORTS.

VOICE: THE CONNECTION CAME TO LIGHT AT A SCIENTIFIC MEETING WITH THE UNLIKELY NAME OF FIRST INTERNATIONAL SYMPOSIUM ON ENVIRONMENTAL CONCERN IN RIGHTS-OF-WAY MANAGEMENT, HELD AT MISSISSIPPI STATE UNIVERSITY. THE SYMPOSIUM WAS DEALING WITH THE ENVIRONMENTAL EFFECTS OF HIGH-VOLTAGE ELECTRIC POWER LINES ON THEIR "RIGHT-OF-WAY," THAT IS, THE GROUND UNDERNEATH THE WIRES WHICH CARRY AS MUCH AS THREE-QUARTER-MILLION VOLTS OF ELECTRICITY.

DOCTOR H.B. GRAVES, AN ASSOCIATE PROFESSOR OF POULTRY SCIENCE AT PENNSYLVANIA STATE UNIVERSITY, REPORTED ON HIS FINDING THAT STRONG ELECTRIC FIELDS TEND TO ACCELERATE THE GROWTH OF MALE CHICKENS FOR A FEW WEEKS AFTER BIRTH. PROFESSOR GRAVES FOUND THAT CHICKENS EXPOSED TO HIGH ELECTRIC FIELDS FOR FOUR DAYS EXHIBITED SOMEWHAT REDUCED ACTIVITY AND A TEN PERCENT INCREASE IN THEIR WEIGHT. BUT THIS INCREASE WAS SEEN ONLY IN MALES. FEMALE CHICKENS REMAINED UNAFFECTED BY THE ELECTRICITY.

OTHER THAN THE INCREASED GROWTH OF MALE CHICKENS, THE PENNSYLVANIA SCIENTIST FOUND NO OTHER EVIDENCE OF THE EXPOSURE TO HIGH-VOLTAGE ELECTRIC FIELDS MAKING ANY

VOICE: DIFFERENCE. HE THINKS, HE SAID, "THAT THE FORCE FIELD  
(CONT'D) EITHER OPERATES BY STIMULATING THE MALE NEUROENDOCRINE  
SYSTEM AND THAT THE ENHANCED GROWTH RESPONSE IS A  
RESULT OF THAT STIMULATION, OR THAT REDUCED ACTIVITY  
OF THE EXPOSED CHICKENS SHUNTS ENERGY INTO GROWTH  
RATHER THAN BODY MAINTENANCE."

INCIDENTALLY, CHICKEN GROWERS NEED NOT WASTE EXPENSIVE  
ELECTRICITY. DOCTOR GRAVES HAS ALSO FOUND THAT AFTER  
ABOUT FIVE WEEKS, THE FEMALES AND THE NON-EXPOSED  
MALES HAVE CAUGHT UP IN THE GROWTH THE ELECTRIFIED  
CHICKENS.

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